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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,566	08/13/2001	Yukihiro Matsukawa	1692-011111	7158

28289 7590 02/23/2005

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EXAMINER
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HANSEN, COLBY M

ART UNIT	PAPER NUMBER
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3682

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/928,566

Applicant(s)

MATSUKAWA, YUKIHIRO

Examiner

Colby Hansen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 5, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Pat. 2-14921, in view of German Pat. 743560, and further in view of Japanese Pat. 411020723 A.

Japanese Pat. 2-14921 discloses a dividing head comprising a circular table (exposed outer portion of 1 as seen in figure 3) attached to a worm wheel shaft, said worm wheel shaft having at least one worm wheel assembled thereon (fig. 5).

However, Japanese Pat. 2-14921 does not disclose the worm bodies being adjustable or the worm teeth formed such that the thickness dimension of said teeth gradually increases in the direction of the rotation axis of a drive shaft.

German Pat. 743560 discloses a hollow body;  
a drive shaft 1 fitted into a hollow portion of said body, and an assembler (fig. 1) having an annular portion which is coaxial with said drive shaft to couple both by frictional engagement;  
said assembler includes a cylinder which forms said annular portion, the cylinder being disposed between said body and said drive shaft, having a fluid reservoir in an interior of the cylinder, and being expandable with the outer periphery and the inner periphery of said cylinder

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displaced outwardly and inwardly in the radial direction by the pressure of the reservoir fluid (fig. 1);

a flange 14 integrally following one end of said cylinder and having a screw hole (around part 14) connected to said reservoir;

and a screw member 13 screwable into said screw hole; and

wherein said body has a fitting hole for receiving said cylinder, the fitting hole having a larger diameter than that of said drive shaft in an axial position corresponding to said body's outer circumference (fig. 1).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the coupling and uncoupling means of German Pat. 743560 on all of the worm bodies within worm gear assembly of Japanese Pat. 2-14921, so as allow for general uncoupling and uncoupling of torque transmitting elements as well as adjustment upon the shaft.

Furthermore, Japanese Pat. 411020723 A discloses a worm with teeth formed such that the thickness dimension of said teeth gradually increases in the direction of the rotation axis of a drive shaft.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the worm teeth of Japanese Pat. 411020723 A within the worms of Kitagawa (US Pat. 5,188,004) so as to have a varied engagement of the worm with the worm wheel, thereby allowing for the optimal transfer of force between a worm/worm wheel engagement, given the intended use.

Claims 1, 2, and 5, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Pat. 2-14921, in view of Falk (US Pat. 4,093,052), and further in view of Japanese Pat. 411020723 A.

Japanese Pat. 2-14921 discloses a dividing head comprising a circular table (exposed outer portion of 1 as seen in figure 3) attached to a worm wheel shaft, said worm wheel shaft having at least one worm wheel assembled thereon (fig. 5).

However, Japanese Pat. 2-14921 does not disclose the worm bodies being adjustable or the worm teeth formed such that the thickness dimension of said teeth gradually increases in the direction of the rotation axis of a drive shaft.

Falk (US Pat. 4,093,052) discloses a hollow body 25;  
a drive shaft 26 fitted into a hollow portion of said body, and an assembler 11, 12, 13, 14, 15 16, 27, 30 having an annular portion which is coaxial with said drive shaft to couple both by frictional engagement;

said assembler includes a cylinder 11, 12, 13, 14 which forms said annular portion, the cylinder being disposed between said body and said drive shaft, having a fluid reservoir in an interior of the cylinder, and being expandable with the outer periphery and the inner periphery of said cylinder displaced outwardly and inwardly in the radial direction by the pressure of the reservoir fluid (fig. 3);

a flange 16 integrally following one end of said cylinder and having a screw hole (around part 30) connected to said reservoir;

and a screw member 30 screwable into said screw hole; and

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wherein said body has a fitting hole for receiving said cylinder, the fitting hole having a larger diameter than that of said drive shaft in an axial position corresponding to said body's outer circumference (fig. 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the coupling and uncoupling means of Falk (US Pat. 4,093,052) on all of the worm bodies within worm gear assembly of Kitagawa (US Pat. 5,188,004) so as allow for general uncoupling and uncoupling of torque transmitting elements wherein large changes in temperature fluxuations have less impact on the performance of said elements, as suggested by Falk (US Pat. 4,093,052).

Furthermore, Japanese Pat. 411020723 A discloses a worm with teeth formed such that the thickness dimension of said teeth gradually increases in the direction of the rotation axis of a drive shaft.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the worm teeth of Japanese Pat. 411020723 A within the worms of Kitagawa (US Pat. 5,188,004) so as to have a varied engagement of the worm with the worm wheel, thereby allowing for the optimal transfer of force between a worm/worm wheel engagement, given the intended use.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1,2, and 5 have been considered but are moot in view of the new ground(s) of rejection.

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***FACSIMILE TRANSMISSION***

Submission of your response by facsimile transmission is encouraged. Group 3600's facsimile number is **(703) 872-9306**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence not permitted by facsimile transmission, see MEP. 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check **should not be** submitting by facsimile transmission separately from the check.

Responses submitted by facsimile transmission should include a Certificate of Transmission (MEP. 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (703) 872-9306) on \_\_\_\_\_  
(Date)

Typed or printed name of person signing this certificate:

\_\_\_\_\_

\_\_\_\_\_  
(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and MEP. 502.02). Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colby Hansen whose telephone number is (703) 305-1036. The examiner can normally be reached on Monday through Thursday and every other Friday from 7:30 PM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bucci, can be reached on (703) 308-3668. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168.

Colby M. Hansen

Patent Examiner

 2/20/05

  
DAVID A. BUCCI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600